



DAE/IFD

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No: ~~10/700,186~~ 10/706186
Confirmation No. 6129
Applicant: GLAZER
Filed: November 11, 2003
Group Art Unit: 2837
Examiner: LOCKETT, KIMBERLY R.
Attorney Docket No: 7761-0001
For: BRASS-WIND INSTRUMENT VALVE AND METHOD

TRANSMITTAL LETTER

Mail Stop Petition
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir or Madam:

Please find enclosed for filing the following:

- Petition For Revival of an Application for Patent Abandoned Unintentionally Under 37 C.F.R. 1.137 (b) (with enclosures and exhibits); and
- One (1) Postcard

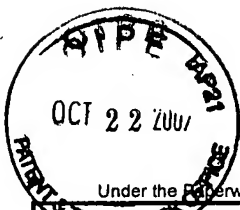
Please charge any additional fees to Deposit Account No. 50-0951.

Respectfully submitted,

Date:

October 15, 2007

Jon M. Gibbs
Reg. No. 47,594

**PETITION FOR REVIVAL OF AN APPLICATION FOR PATENT
ABANDONED UNINTENTIONALLY UNDER 37 CFR 1.137(b)**

Docket Number (Optional)

7761-0001

First named inventor: Glazer, Benoit

Application No.: 10/706,186

Art Unit: 2837

Filed: November 11, 2003

Examiner: Lockett, Kimberly L.

Title: Brass-Wind Instrument Valve and Method

Attention: Office of Petitions

Mail Stop Petition

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

FAX (571) 273-8300

NOTE: If information or assistance is needed in completing this form, please contact Petitions
Information at (571) 272-3282.

The above-identified application became abandoned for failure to file a timely and proper reply to a notice or
action by the United States Patent and Trademark Office. The date of abandonment is the day after the expiration
date of the period set for reply in the office notice or action plus an extensions of time actually obtained.

APPLICANT HEREBY PETITIONS FOR REVIVAL OF THIS APPLICATION

NOTE: A grantable petition requires the following items:

- (1) Petition fee;
- (2) Reply and/or issue fee;
- (3) Terminal disclaimer with disclaimer fee - required for all utility and plant applications
filed before June 8, 1995; and for all design applications; and
- (4) Statement that the entire delay was unintentional.

1. Petition fee☒ Small entity-fee \$ 770.00 (37 CFR 1.17(m)). Applicant claims small entity status. See 37 CFR 1.27.☐ Other than small entity - fee \$ _____ (37 CFR 1.17(m))**2. Reply and/or fee**

A. The reply and/or fee to the above-noted Office action in
the form of Amendment & Response (identify type of reply):

- ☐ has been filed previously on _____.
- ☒ is enclosed herewith.

B. The issue fee and publication fee (if applicable) of \$ _____.

- ☐ has been paid previously on _____.
- ☐ is enclosed herewith.

[Page 1 of 2]

This collection of information is required by 37 CFR 1.137(b). The information is required to obtain or retain a benefit by the public which is to file (and by the
USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1.0 hour to
complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any
comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer,
U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED
FORMS TO THIS ADDRESS. **SEND TO: Mail Stop Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

10/23/2007 ENT/LEW 00000050 500951 10709186
01 FC:2453 770.00 DA

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

3. Terminal disclaimer with disclaimer fee

☒ Since this utility/plant application was filed on or after June 8, 1995, no terminal disclaimer is required.

☐ A terminal disclaimer (and disclaimer fee (37 CFR 1.20(d)) of \$ _____ for a small entity or \$ _____ for other than a small entity) disclaiming the required period of time is enclosed herewith (see PTO/SB/63).

4. STATEMENT: The entire delay in filing the required reply from the due date for the required reply until the filing of a grantable petition under 37 CFR 1.137(b) was unintentional. [NOTE: The United States Patent and Trademark Office may require additional information if there is a question as to whether either the abandonment or the delay in filing a petition under 37 CFR 1.137(b) was unintentional (MPEP 711.03(c), subsections (III)(C) and (D)).]

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.


Signature

Jon M. Gibbs, AKERMAN SENTERFITT

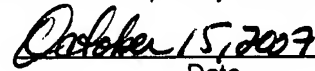
Typed or printed name

420 South Orange Avenue, Suite 1200

Address

Orlando, Florida 32801

Address


Date

47,594

Registration Number, if applicable

407-423-4000

Telephone Number

Enclosures: ☐ Fee Payment

☒ Reply

☐ Terminal Disclaimer Form

☒ Additional sheets containing statements establishing unintentional delay

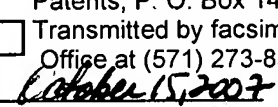
☒ Other: Fee payment authorization from Deposit Account 50-0951.

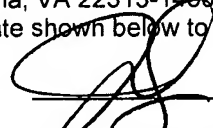
CERTIFICATE OF MAILING OR TRANSMISSION [37 CFR 1.8(a)]

I hereby certify that this correspondence is being:

☒ Deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop Petition, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450.

☐ Transmitted by facsimile on the date shown below to the United States Patent and Trademark Office at (571) 273-8300.


Date


Signature

Jon Michael Gibbs

Typed or printed name of person signing certificate



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No: ~~10/709,186~~ **10/706186**
Confirmation No. 6129
Applicant: GLAZER
Filed: November 11, 2003
Group Art Unit: 2837
Examiner: LOCKETT, KIMBERLY R.
Attorney Docket No: 7761-0001
For: BRASS-WIND INSTRUMENT VALVE AND METHOD

**STATEMENT OF UNINTENTIONAL DELAY
AND FEE PAYMENT AUTHORIZATION**

Sir:

Applicant respectfully submits this statement of unintentional delay in support of the accompanying Petition for Revival of an Application for Patent Abandoned Unintentionally under 37 C.F.R. 1.137(b):

On May 2, 2006 the Examiner mailed an Office Action in the above-referenced application.

On September 5, 2006, Applicant filed an Amendment and Response, along with a 1 Month Petition for Extension of Time.

On November 29, 2006, the USPTO issued a Notice of Non-Compliant Amendment under 37 C.F.R. 1.121. (Exhibit A).

On December 29, 2006, Applicant filed an Amendment and Response to the Notice of Non-Compliant Amendment addressing the issues contained in the aforementioned Notice.

On July 7, 2007, a full six (6) months after the December 29, 2006 Amendment and Response, the USPTO issued a Failure to Acceptably Respond to Notice of Non-Compliant Amendment. (Exhibit B).

The Failure to Acceptably Respond to Notice of Non-Compliant Amendment was issued as a result of a scrivener's error labeling non-elected claims 11 and 12 as "withdrawn" instead of "Canceled."

On August 28, 2007, the USPTO issued a Notice of Abandonment for failure to reply to the Office Action dated May 2, 2006. (Exhibit C).

STATEMENT OF UNINTENTIONAL DELAY

Appln. No.: ~~10/709,186~~ **10/706186**

Confirmation No. 6129

Page - 2 -

Applicant was unaware of the error and the time in which to respond had long since elapsed. Periodic status checks did not show the Amendment and Response to the Notice of Non-Compliant Amendment as being non-compliant and Applicant respectfully asserts that the failure to respond was unintentional.

The complete Amendment and Response to the Office Action dated May 2, 2006 is attached hereto. (Exhibit D).

Applicant respectfully requests the decision of the petition in writing and further examination of this application as soon as possible. The Commissioner for Patents and Trademarks is hereby authorized to charge the amount due for any retroactive extensions of time and any deficiency in any fees due with the filing of this paper or credit any overpayment in any fees paid on the filing or during prosecution of this application to Deposit Account No. 50-0951.

STATEMENT

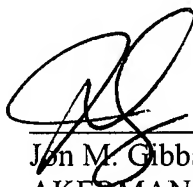
Applicant hereby states that the entire delay in filing the required reply from the due date for the reply until the filing of this Petition pursuant to 37 CFR § 1.137(b) was unintentional.

The Examiner is authorized to charge the \$770.00 fee for this Petition pursuant to 37 C.F.R. § 1.17(m) and all other fees to Deposit Account No. 50-0951.

Reinstatement of the subject patent application is respectfully requested.

Respectfully submitted,

Date: October 15, 2007



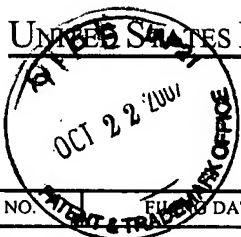
Jon M. Gibbs, Reg. No. 47,594
AKERMAN SENTERFITT
420 South Orange Avenue, Suite 1200
Orlando, Florida 32801
Telephone: 407-419-8434
Facsimile: 407-843-6610

Docket No. 7761-0001

EXHIBIT A



UNITED STATES PATENT AND TRADEMARK OFFICE



UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,186	11/12/2003	Benoit Glazer	34728	6129

7590 11/29/2006

AKERMAN SENTERFITT
P O BOX 231
ORLANDO, FL 32802-0231

EXAMINER

LOCKETT, KIMBERLY R

ART UNIT PAPER NUMBER

2837

DATE MAILED: 11/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Notice of Non-Compliant
Amendment (37 CFR 1.121)**

Application No.

10-706186

Applicant(s)

GLAZER PATENT

Examiner

Art Unit

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

The amendment document filed on 9-11-06 is considered non-compliant because it has failed to meet the requirements of 37 CFR 1.121 or 1.4. In order for the amendment document to be compliant, correction of the following item(s) is required.

THE FOLLOWING MARKED (X) ITEM(S) CAUSE THE AMENDMENT DOCUMENT TO BE NON-COMPLIANT:

☒ 1. Amendments to the specification:

- ☒ A. Amended paragraph(s) do not include markings.
☐ B. New paragraph(s) should not be underlined..
☐ C. Other _____

☐ 2. Abstract:

- ☐ A. Not presented on a separate sheet. 37 CFR 1.72.
☐ B. Other _____

☐ 3. Amendments to the drawings:

- ☐ A. The drawings are not properly identified in the top margin as "Replacement Sheet," "New Sheet," or "Annotated Sheet" as required by 37 CFR 1.121(d).
☐ B. The practice of submitting proposed drawing correction has been eliminated. Replacement drawings showing amended figures, without markings, in compliance with 37 CFR 1.84 are required.
☐ C. Other _____

☒ 4. Amendments to the claims:

- ☐ A. A complete listing of all of the claims is not present.
☒ B. The listing of claims does not include the text of all pending claims (including withdrawn claims)
☐ C. Each claim has not been provided with the proper status identifier, and as such, the individual status of each claim cannot be identified. Note: the status of every claim must be indicated after its claim number by using one of the following status identifiers: (Original), (Currently amended), (Canceled), (Previously presented), (New), (Not entered), (Withdrawn) and (Withdrawn-currently amended).
☐ D. The claims of this amendment paper have not been presented in ascending numerical order.
☒ E. Other: 11+12

☐ 5. The amendment is unsigned or not signed in accordance with 37 CFR 1.4.

For further explanation of the amendment format required by 37 CFR 1.121, see MPEP § 714 and the USPTO website at <http://www.uspto.gov/web/offices/pac/dapp/opla/preognotice/officeflyer.pdf>.

TIME PERIODS FOR FILING A REPLY TO THIS NOTICE:

- Applicant is given **no new time period** if the non-compliant amendment is an after-final amendment or an amendment filed after allowance. If applicant wishes to resubmit the non-compliant after-final amendment with corrections, the **entire corrected amendment** must be resubmitted within the time period set forth in the final-Office action.
- Applicant is given **one month**, or thirty (30) days, whichever is longer, from the mail date of this notice to supply the **corrected section** of the non-compliant amendment in compliance with 37 CFR 1.121 or 1.4, if the non-compliant amendment is one of the following: a preliminary amendment, a non-final amendment (including a submission for a request for continued examination (RCE) under 37 CFR 1.114), a supplemental amendment filed within a suspension period under 37 CFR 1.103(a) or (c), and an amendment filed in response to a *Quayle* action.

Extensions of time are available under 37 CFR 1.136(a) only if the non-compliant amendment is a non-final amendment or an amendment filed in response to a *Quayle* action.

Failure to timely respond to this notice will result in:

Abandonment of the application if the non-compliant amendment is a non-final amendment or an amendment filed in response to a *Quayle* action; or

Non-entry of the amendment if the non-compliant amendment is a preliminary amendment or supplemental amendment.

Legal Instruments Examiner (LIE)

Telephone No.

RECEIVED

DEC - 4 2006

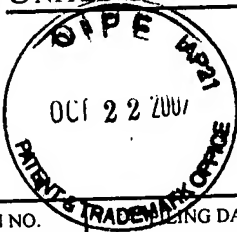
JON M. GIBBS

571-272-1621

EXHIBIT B



UNITED STATES PATENT AND TRADEMARK OFFICE



UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/706,186

11/12/2003

Benoit Glazer

34728

6129

7590

07/06/2007

AKERMAN SENTERFITT
P O BOX 231
ORLANDO, FL 32802-0231

EXAMINER

LOCKETT, KIMBERLY R

ART UNIT

PAPER NUMBER

2837

MAIL DATE

DELIVERY MODE

07/06/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

RECEIVED

JUL - 9 2007

JON M. GIBBS



UNITED STATES PATENT AND TRADEMARK OFFICE



Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

**Failure to Acceptably Respond to
Notice of Non-Compliant Amendment (37 CFR 1.121)
No New Time Period for Reply is Provided**

10-706,186

The amendment document filed on 1-3-07 fails to provide the corrective action required by the prior Notice of Non-Compliant Amendment (37 CFR 1.121) mailed on 11-29-06. The amendment, including both the originally filed amendment and the amendment filed in response to the prior notice, is still considered to be non-compliant under 37 CFR 1.121. In order for the amendment document to be compliant, correction of the item(s) listed below is required. **Only the corrected section of the non-compliant amendment document must be resubmitted (in its entirety), e.g., the entire "Amendments to the claims" section of applicant's amendment document must be re-submitted.** 37 CFR 1.121(h).

The period for reply continues to run from the mailing date of the prior Notice of Non-Compliant Amendment. The corrections listed below must be timely filed to avoid abandonment of the application. No new time period for reply is provided in this communication. See the Manual of Patent Examining Procedure (MPEP) § 714.03.

If the period for reply set forth in the prior Notice of Non-Compliant Amendment has expired, this application will become abandoned unless applicant: (1) corrects the deficiency, and (2) obtains an extension of time under 37 CFR 1.136(a). In no case may an applicant reply outside the SIX (6) MONTH statutory period or obtain an extension for more than FIVE (5) MONTHS beyond the date for reply set forth in the prior Notice of Non-Compliant Amendment (37 CFR 1.121).

THE FOLLOWING CHECKED (X) ITEM(S) CAUSE THE AMENDMENT DOCUMENT TO BE NON-COMPLIANT:

☐ 1. Amendments to the specification:

- ☐ A. Amended paragraph(s) do not include markings.
☐ B. New paragraph(s) should not be underlined.
☐ C. Other:

☐ 2. Abstract:

- ☐ A. Not presented on a separate sheet. 37 CFR 1.72.
☐ B. Other:

☐ 3. Amendments to the drawings:

- ☐ A. The drawings are not properly identified in the top margin as "Replacement Sheet," "New Sheet," or "Annotated Sheet" as required by 37 CFR 1.121(d).
☐ B. The practice of submitting proposed drawing correction has been eliminated. Replacement drawings showing amended figures, without markings, in compliance with 37 CFR 1.84 are required.
☐ C. Other:

☒ 4. Amendments to the claims:

- ☐ A. A complete listing of all of the claims is not present.
☒ B. The listing of claims does not include the text of all pending claims (including withdrawn claims)
☒ C. Each claim has not been provided with the proper status identifier, and as such, the individual status of each claim cannot be identified. Note: the status of every claim must be indicated after its claim number by using one of the following 7 status identifiers: (Original), (Currently amended), (Canceled), (Previously presented), (New), (Not entered), (Withdrawn) and (Withdrawn-currently amended).
☐ D. The claims of this amendment paper have not been presented in ascending numerical order.
☒ E. Other: **IF CLAIMS 11 and 12 are canceled. The Status Identifier SHOULD BE (canceled)**

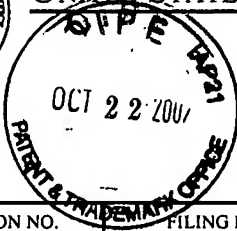
Wynette Stapp
Supervisory Legal Instruments Examiner (SLIE)

571-272-1626
Telephone No.

EXHIBIT C



UNITED STATES PATENT AND TRADEMARK OFFICE



UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/706,186

11/12/2003

Benoit Glazer

34728

6129

7590
AKERMAN SENTERFITT
P O BOX 231
ORLANDO, FL 32802-0231

08/28/2007

EXAMINER

LOCKETT, KIMBERLY R

ART UNIT

PAPER NUMBER

2837

MAIL DATE

DELIVERY MODE

08/28/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

RECEIVED
AUG 31 2007
JON M. GIBBS



Notice of Abandonment

Application No.

10/706,186

Examiner

Kim R. Lockett

Applicant(s)

GLAZER, BENOIT


Art Unit

2837

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

This application is abandoned in view of:

1. ☒ Applicant's failure to timely file a proper reply to the Office letter mailed on 5/2/06.
 - (a) ☐ A reply was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply (including a total extension of time of _____ month(s)) which expired on _____.
 - (b) ☐ A proposed reply was received on _____, but it does not constitute a proper reply under 37 CFR 1.113 (a) to the final rejection.
(A proper reply under 37 CFR 1.113 to a final rejection consists only of: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114).
 - (c) ☐ A reply was received on _____ but it does not constitute a proper reply, or a bona fide attempt at a proper reply, to the non-final rejection. See 37 CFR 1.85(a) and 1.111. (See explanation in box 7 below).
 - (d) ☒ No reply has been received.
2. ☐ Applicant's failure to timely pay the required issue fee and publication fee, if applicable, within the statutory period of three months from the mailing date of the Notice of Allowance (PTOL-85).
 - (a) ☐ The issue fee and publication fee, if applicable, was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the statutory period for payment of the issue fee (and publication fee) set in the Notice of Allowance (PTOL-85).
 - (b) ☐ The submitted fee of \$_____ is insufficient. A balance of \$_____ is due.
The issue fee required by 37 CFR 1.18 is \$_____. The publication fee, if required by 37 CFR 1.18(d), is \$_____.
 - (c) ☐ The issue fee and publication fee, if applicable, has not been received.
3. ☐ Applicant's failure to timely file corrected drawings as required by, and within the three-month period set in, the Notice of Allowability (PTO-37).
 - (a) ☐ Proposed corrected drawings were received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply.
 - (b) ☐ No corrected drawings have been received.
4. ☐ The letter of express abandonment which is signed by the attorney or agent of record, the assignee of the entire interest, or all of the applicants.
5. ☐ The letter of express abandonment which is signed by an attorney or agent (acting in a representative capacity under 37 CFR 1.34(a)) upon the filing of a continuing application.
6. ☐ The decision by the Board of Patent Appeals and Interference rendered on _____ and because the period for seeking court review of the decision has expired and there are no allowed claims.
7. ☐ The reason(s) below:


KIMBERLY LOCKETT
PRIMARY EXAMINER

Petitions to revive under 37 CFR 1.137(a) or (b), or requests to withdraw the holding of abandonment under 37 CFR 1.181, should be promptly filed to minimize any negative effects on patent term.

EXHIBIT D



OFFICE OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No: ~~10/709,186~~ **10/706186**
Confirmation No. 6129
Applicant: GLAZER
Filed: November 11, 2003
Group Art Unit: 2837
Examiner: LOCKETT, KIMBERLY R.
Attorney Docket No: 7761-0001
For: BRASS-WIND INSTRUMENT VALVE AND METHOD

CERTIFICATE UNDER 37 CFR 1.8(a)

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as First Class mail in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on October 15, 2007.


Jon M. Gibbs., Registration No. 47,594

AMENDMENT AND RESPONSE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

INTRODUCTORY COMMENTS

This is in response to the Office Action dated May 2, 2006. Please amend the above-identified application as follows:

Amendments to the claims begin on page 2 of this paper.

Remarks/arguments begin on page 5 of this paper.

Exhibits: A clean version of the Substitute Specification is appended hereto as Exhibit A and a Marked-Up version of the Substitute Specification showing all amendments is appended hereto as Exhibit B. Please replace the original Specification with the Substitute Specification submitted herewith. Substitute Drawings are appended hereto as Exhibit C. No new matter has been added by this Amendment.

AMENDMENTS TO THE CLAIMS

This listing will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) A brass-wind instrument comprising:
 - a mouthpiece;
 - a lead pipe in fluid communication with said mouthpiece;
 - a monoblock valve body in fluid communication with said lead pipe further comprising a plurality of valve chambers;
 - a plurality of valves dispersed in said valve chambers;
 - a plurality of elongation tubes in fluid communication with said monoblock valve body to elongate an air column therein;
 - an exit tube; and
 - a bell in fluid communication with said exit tube.
2. (Previously presented) The brass-wind instrument of claim 1 wherein each valve comprises an unimpeded air channel.
3. (Previously presented) The brass-wind instrument of claim 1, wherein each elongation tube interfaces with said monobody valve block at an angle substantially perpendicular to the axis of said valve chamber.
4. (Previously presented) The brass-wind instrument of claim 1 wherein said mouthpiece receiver is gapless.

5. (Previously presented) The brass-wind instrument of claim 4, wherein said gapless mouthpiece comprises a negatively shaped conical shank.

6. (Previously presented) The brass-wind instrument of claim 5, wherein said negatively shaped conical shank comprises an inner diameter equal to the inner diameter of the entrance to said leadpipe.

7. (Previously presented) The brass-wind instrument of claim 6, wherein said leadpipe has a positive conical shape.

8. (Currently amended) The brass-wind instrument of claim 1, wherein the valve channel in said monobody valve block further comprises valve ~~guide~~ guides.

9. (Previously presented) The brass-wind instrument of claim 1, wherein said monobody valve block comprises a threaded region at the top of each valve cylinder to complementarily receive a valve cap.

10. (Previously presented) The brass-wind instrument of claim 1, wherein said monobody valve block comprises a threaded region at the bottom of each valve cylinder to complementarily receive a cap to manage lubricant run-off from the valve.

11. (Canceled)

12. (Canceled)

13. (Previously presented) A monoblock valve body for a musical instrument comprising: a single piece body further comprising a plurality of valve cylinders for receiving valves and a plurality of ports and interfaces in fluid communication with said valve cylinder, wherein said ports and interfaces are substantially perpendicular to the axis of said valve cylinder.

14. (Currently amended) The monoblock valve body of claim 13, wherein said ~~parts~~ ports are in further fluid communication with tubes.

15. (Previously presented) The monoblock valve body of claim 14, wherein said tubes comprise a lead pipe, a plurality of elongation tubes, and an exit tube.

16. (Previously presented) The monoblock valve body of clam 13, wherein said interfaces provide fluid communication between valves.

17. (Previously presented) The monoblock valve body of claim 13, wherein said valves are unimpeded.

18. (Previously presented) The monoblock valve body of claim 13, wherein said valves further comprise valve guides.

19. (Previously presented) The monoblock valve body of claim 13, wherein at least one valve casing further comprises a threaded region at the top portion of said valve casing to retain a valve piston.

20. (Previously presented) The monoblock valve body of claim 13, wherein at least one valve casing further comprises a threaded region at the top portion of said valve casing to receive a valve cover.

REMARKS

The foregoing amendments and these remarks are in response to the Office Action dated May 2, 2006. At the time of the Office Action, claims 1 through 10 and 13 through 20 were pending in the application. In the subject Office Action, the Examiner set forth a restriction/election requirement; objected to the drawings; objected to claims 1-10, 14 and 15; objected to the specification; rejected claims 5, 8 and 18 under 35 U.S.C. § 112, first paragraph; rejected claims 1-4, 11, 12 and 13-17 under 35 U.S.C. § 103(a); claims 5-8 and 18 were objected to as being dependent upon a rejected base claim, but were indicated to be allowable if rewritten in independent form. The rejections are discussed in more detail below.

I. Election/Restrictions

The Examiner set forth a restriction requirement requiring Applicant to elect one of two species of invention. On April 12, 2006, Applicant provisionally elected to prosecute the species comprising claims 1-10 and 13-20, without traverse. Applicant hereby affirms the election of claims 1-10 and 13-20, without traverse. Claims 11 and 12 are hereby canceled without prejudice.

II. Drawings

The Examiner objected to the drawings as failing to show the "threaded region at the top portion of the valve casing" and the "valve pistons." Applicant respectfully submits the attached corrected drawing sheets. Formal drawing sheets will be submitted in due course. Only Figs. 7 and 10 have been amended. Fig. 7 was amended to properly show the threaded regions 91, 93, 95, and 63, 65, 67 at the top and bottom of the valves, respectively. Fig 7 was also amended to: include the valve pistons 41, 43, 45; properly show the valve cylinders 90, 92, 94; and illustrate the valve guides 51, 53 and 55. Fig 10 was amended to indicate the exit bore 28 of the mouthpiece. No new matter was added by these amendments to the drawings.

III. Claim Objections

The Examiner objected to claims 1-10, 14 and 15 for certain informalities. Applicant respectfully suggests that the Amendments to claims 1 and 14 to correct minor typographical errors and omissions obviate the Examiner's objections and place the claims in condition for allowance.

IV. Specification Objection

The Examiner objected to the specification for failing to provide the proper antecedent basis for the claimed features "shank" and "guider." Applicant respectfully submits herewith a substitute specification which provides the proper antecedent basis for the features "shank" and "guides." A marked-up version of the specification also accompanies this paper. "Guider" was a typographical error in the initial application that should have been "guides." Because the subject features were disclosed in the original claims, no new matter has been added by these amendments.

V. Rejection under 35 U.S.C. § 112, first paragraph

The Examiner rejected claims 5, 8 and 18 for failing to comply with the written description requirement. Applicant respectfully submits that the attached substitute specification corrects some obvious minor typographical errors as well as providing an adequate written description for the well known "shank" and "guides" features claimed in the application. Applicant respectfully suggests that the amendments to the specification obviate the Examiner's rejection to the claims. Applicant respectfully submits that claims 5 and 18 are allowable as written and claim 8 is allowable as corrected.

VI. Rejections on Art

Claims 1-4, 11, 12 and 13-17 stand rejected under 35 U.S.C 103 (a) over United States Patent No. 6,008,444 to Chesko *et al.* in view of JP02004354492A. Claims 11 and 12 have been withdrawn from consideration, accordingly this response is directed to claims 1-4 and 13-17. The Examiner asserts that the Chesko *et al.* reference "discloses the use of a brass wind instrument

comprising [*inter alia*] a gapless mouthpiece . . ." but not a "monoblock or single piece body." The Examiner further asserts that the JP02004354492A discloses the monoblock or single piece body and that it would have been obvious to a person of skill in the art to combine the references to yield the invention claimed in claims 1-4 and 13-17.

Applicant respectfully traverses this assertion noting that "[t]he consistent criterion for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that this process should be carried out and would have a reasonable likelihood of success, viewed in the light of the prior art." In re Dow Chemical, 837 F.2d 469, 473, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988).

Turning first to the Chesko *et al.* reference, the reference is bereft of any mention of a "gapless mouthpiece." In addition, the reference provides no suggestion or motivation, explicit or implicit, to combine what is disclosed with the JP02004354492A reference to yield the instant invention. Turning next to the JP02004354492A reference, the reference is also bereft of any monobody valve block as claimed in the instant application. The drawings of the JP02004354492A reference are nothing more than abstract drawings of an inoperable valve indesign. As can be seen in the drawings, only three sides of the valves are used. This configuration results in severe limitations on the availability of space in which to place air channels in the valve pistons. Accordingly, the air channels are necessarily occluded; a limitation overcome by the instant invention. The JP02004354492A reference also fails to provide a suggestion or motivation, explicit or implicit, to combine what is disclosed with the Chesko *et al.* reference to yield the instant invention. Applicant respectfully suggests that the arguments presented overcome the Examiner's rejection of claims 1-4 and 13-17 and respectfully request allowance of such claims.

Next, the Examiner rejected claims 9, 10, 19 and 20 under 35 U.S.C 103 (a) over United States Patent No. 6,008,444 to Chesko *et al.* in view of JP02004354492A and United States Patent Number 3,030,846 to Greenleaf. The Examiner asserts similar reasons for the use of the Chesko *et al.* and JP02004354492A references in the rejection and further asserts that the deficiencies in these references in teaching what is disclosed in claims 9, 10, 19 and 20 are taught by the Greenleaf reference. Specifically, the Examiner asserts that the Greenleaf reference discloses a valve casing

having a threaded region at the top and bottom to receive a valve cover and retain a valve piston. Applicant respectfully incorporates the arguments made against the Chesko *et al.* and JP02004354492A references above and respectfully traverses the Examiner's assertion as to the Greenleaf reference completing the instant invention. The Greenleaf reference does disclose the use of threaded regions to receive valve covers and to retain valve pistons; however, the deficiencies in what is disclosed in the Chesko *et al.* and JP02004354492A references are not overcome by the Greenleaf reference. Furthermore, the Greenleaf reference fails to provide a suggestion or motivation, explicit or implicit, to combine what is disclosed in the Chesko *et al.*, JP02004354492A and Greenleaf references to yield the instant invention. Applicant respectfully suggests that the arguments presented overcome the Examiner's rejection of claims 9, 10, 19 and 20 and respectfully request allowance of such claims.

VII. Conclusion

Applicants have made every effort to present claims which distinguish over the prior art, and it is thus believed that all claims are in condition for allowance. Nevertheless, Applicants invite the Examiner to call the undersigned if it is believed that a telephonic interview would expedite the prosecution of the application to an allowance. In view of the foregoing remarks, Applicants respectfully request reconsideration and prompt allowance of the pending claims.

Date: October 15, 2007

Respectfully submitted,



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EXHIBIT A

BRASS-WIND INSTRUMENT VALVE AND METHOD

Field of the Invention

[0001] The subject invention pertains to brass-wind musical instruments and more specifically to mono body valve blocks for brass-wind instruments.

Background of the Invention

[0002] In brass-wind musical instruments, sounds are initially produced by players pressing their lips against bell-shaped mouthpieces and blowing into the mouthpieces while maintaining their lips in a rigid configuration. The air passing through the rigid lips of the players causes the skin of the lip to resonate thereby resulting in a concentric column of air comprising a "buzzing" sound. As this column of buzzing air passes into the instrument, it flows through a series of tubes and valves comprising the instrument wherein it is amplified before it exits from the bell portion of the instrument thereby creating a tone. It is the series of sharp turns within the valves and tubes that generally alter the consistency of the density of the air column and have a negative effect to the tone and the intonation.

[0003] The negative effects resulting from the numerous deficiencies in current brass-wind instruments have been

necessary evils due to the currently widely accepted designs. While minor changes have been proposed to improve brass-wind instruments, musicians have had little choice but to "live with" and play music with the current designs.

[0004] To alter the tones emanating from the instrument, players will adjust the rigidity of their lips, press a series of valves and/or adjust any of the tuning pipes in the instrument. Adjusting the rigidity of the lips alters the initial pitch of the column of air prior to its entering the instrument. Depressing the valves can operate to elongate the column of air resonating through the instrument thus resulting in differing notes. Adjusting any of the tuning pipes operates to fine-tune the instrument by combining the proper pitch with the proper valve configuration and the proper tuning; players are able to play specific notes and thus music.

[0005] Current brass-wind instruments are generally adequate for producing the desired music; however, there is always room to improve the quality of sound produced. Most of the drawbacks to current brass-wind instrument sounds find their genesis in undesirable inconsistencies of the density within the concentric column of air flowing through the instrument. These inconsistencies in the column of air can originate from a number of causes.

[0006] Brass-wind instruments such as, for example, the trumpet, comprises valve sections consisting of valves in separate valve chambers. These valve chambers are generally connected to one another by way of soldered or brazed brass tubes. There are at least three defects inherent in this design that causes impedance in the flow of the column of air traveling through the instrument leading to an interruption of the positive vortex, thereby resulting in an imperfect sound.

[0007] First, due to the distance between the valve chambers, there is a size restriction on the valve. With this size restriction, pistons have restricted air channels caused by two air channels occupying the same general area in the piston valve. Because any connection of the air channels in the valve would effectively rend the instrument useless, one of the valves must have impedance. As a result, one of the conflicting air channels is required to have a shape comprising impedance. This impedance generally comprises a bubble shape located in the air channel. Such impedance in the air channel operates to disrupt the positive vortices of the column of air thus negatively altering its sound.

[0008] Another defect that causes a disruption of the column of air comes as a result of the method of connecting the valve chambers to each other, as well as the remainder of the instrument. Where two tubes are connected, often a sharp ridge

or edge operates to disrupt the flow of the air column causing additional impedance in sound. Because tubes are soldered or braised, the connection resulting from the manufacture of the instrument is often less than perfect. This causes a negative effect on the positive vortices, thereby resulting in a diminished sound.

[0009] Additional defects inherent in the size of the valve section are the odd shapes and sharp bends of the tubes connecting the valve chambers to one another. As the column of air passes through the instrument, it is desirable to have a perfectly smooth transition throughout. Odd shapes and sharp bends can hinder the desired smooth transition and impede the sound. Sharp bends are not limited to the valve sections as there are many sharp bends in brass-wind instruments that can act to disrupt or impede the flow of the column of air created by the player. For example, the tuning tubes that operate to elongate the column of air often have sharp 180° bends that further impede the sound created by the player. With these defects in mind, there has long been a desire in the brass-wind instrument industry to improve the quality of sound.

[0010] Apparatus for tuning instruments in an attempt to overcome many sound deficiencies are known in the art. For example, United States Patent No. 3,990,342 to Reeves discloses an adjustable piston valve having a mechanical means for

continuous adjustment of the upstroke and down stroke of the valve. The adjustment means can be used to tune the instrument for improved play and sound.

[0011] United States Patent No. 4,273,020 to Happe discloses a method of constructing a brass-wind instrument comprising a lead pipe having an increased taper. The gradually increased taper results in a more pure column of air thereby creating an improved sound.

[0012] United States Patent Nos. 4,276,804 and 4,512,233, both to Holland disclose pitch adjusters attached in series with the tubes comprising the instrument. The pitch adjusters operate to change the length of the column of air to fine tune the instrument.

[0013] With all of these inventions furthering the state of the brass-wind instrument art, there is still a need to remedy the inherent defects in currently accepted designs that cause an impedance in sound due to the undesired changes and inconsistencies in the density of the air column. Accordingly, improvements to current brass-wind instruments are both desirable and possible. The following describes such improvements.

Summary of the Invention

[0014] In view of the foregoing background, it is therefore an object of the present invention to provide a brass-wind

instrument and method for making such having improved sound characteristics through a monobody valve block, unimpeded air channels, and larger radii throughout the instrument.

[0015] This and other objects, features, and advantages in accordance with the present invention are provided by a brass-wind instrument comprising a mouthpiece, a lead-pipe, a monobody valve block, a series of tubes connected to said monobody valve block provided to change the length of the air column in the instrument, valves disposed in said monobody valve block, an exit-pipe, and a bell. More specifically, the monobody valve block comprises a series of tubes and valves having sufficient size and shape to avoid impeding the travel of the air column therethrough.

[0016] The monobody valve block is comprised of a single solid piece of material having valve chambers milled therein. For example, the valve chambers are milled vertically through the material. All tube interfaces entering and exiting the valve block are milled at substantially right angles to the body of the valve block and perpendicular to the corresponding valve chamber. Each valve chamber has a guide means that operates to keep the valve disposed therein from rotating within the valve chamber during use.

[0017] The configuration of the monobody valve block is such that the size of the valves may be increased while the valve

block size is substantially similar in overall size to that of conventional valve blocks that comprise separate valve chambers. The valve's pistons are of sufficient size to comprise air channels that do not compete for space. This provides for unoccluded air channels thus resulting in improved acoustical performance.

[0018] The top and/or bottom of each valve chamber may contain threaded regions. The top threaded region operates to maintain the position of the valve and keep it in its proper place. The bottom-threaded region can receive a cap having a shallow basin that operates to collect residual valve lubricant, or other undesirable materials.

[0019] The valve indexing can be substantially similar to that of conventional brass-wind instruments, such as, for example, trumpets, cornets, baritones, tubas and the like. Accordingly, the improved acoustical characteristics of the present invention may be employed in a brass-wind instrument without having to learn to play an additional instrument.

[0020] Attached to the monobody valve block is generally a first slide, a second slide, and a third slide in fluid communication with the valves to allow for a change in the length of the air column. The plurality of slides may be adjusted accordingly to further tune the instrument and further improve the acoustical characteristic thereof.

[0021] The radii of the bends in the brass-wind instrument of the present invention are enlarged to reduce the sharp bends associated with conventional instruments. The enlarged radii allow for the vortices in the air column to travel through the instrument with little to no impedance thus adding to the improved acoustical performance.

[0022] The mouthpiece receiver of the present invention can comprise, for example, a gapless mouthpiece receiver. The gapless mouthpiece receiver substantially eliminates negative vortices resulting from the "gap" that generally occurs between the shank of current mouthpieces and the mouthpiece receivers attached to the lead-pipes. In general, as the buzzing air column crosses the gap of conventional instruments negative vortices are created as a result of the turbulence that occurs. The mouthpiece of the present invention is comprised of a solid piece of material bored out to further comprise a negative conical shape having a diameter equal to that of the smaller end of the positively conical lead-pipe. The turbulence resulting from any existent gap can be controlled by modification of the mouthpiece shank and the air column undergoes no further constriction once it leaves the mouthpiece. Accordingly, the result is a positive concentric vortex having very little or no impedance.

[0023] Further objects and advantages of the present invention will become apparent by reference to the following detailed description of the invention and appended drawings wherein like reference numbers refer to the same feature, element, or component.

Brief Description of the Drawings

[0024] FIG. 1 is an elevational side plan view of a brass-wind musical instrument comprising a monobody valve block according to the present invention.

[0025] FIG. 2 is an elevational top plan view of a brass-wind musical instrument comprising a monobody valve block according to the present invention.

[0026] FIG. 3 is an elevational side plan view of a prior art trumpet.

[0027] FIG. 4 is an elevational top plan view of a prior art trumpet.

[0028] FIG. 5 is an elevational side plan view of a prior art cornet comprising a shepard's crook design.

[0029] FIG. 6 is an elevational side plan view of a conventional prior art valve block.

[0030] FIG. 7 is an elevational side sectional view of the monobody valve block according to the present invention.

[0031] FIG. 8 is an elevational sectional top view illustrating the valve indexing of the monobody valve block according to the present invention.

[0032] FIG. 9 is an elevational sectional side view illustrating the valve indexing of the monobody valve block according to the present invention.

[0033] FIG. 10 is an elevational sectional side view of the gapless mouthpiece according to the present invention.

Detailed Description of the Invention

[0034] Referring now to FIGS 1 and 2, a brass-wind apparatus comprising a monobody valve block according to the present invention is illustrated and generally referred to by the reference number 10.

[0035] The brass-wind instrument 10 generally includes a mouthpiece 20, a mouthpiece receiver 22, a lead-pipe 26, an entrance tube 28, monobody valve block 30, valves 40, 42, 44, a first-slide 32, a second-slide 34, a third-slide, 36 an exit tube, 38 and a bell 100.

[0036] Sound comprising a column of air is made at the mouthpiece 20 that is complementarily received in a mouthpiece receiver 22. The mouthpiece 20 preferably comprises a negative conical internal shape and is received in the mouthpiece receiver 22. The mouthpiece receiver 22 further comprises a friction means 24 to removably retain and adjust the mouthpiece

20 therein. The mouthpiece 20 may be adjusted to fine tune the instrument 10. The column of air is pushed from the mouthpiece 20 into the lead-pipe 26 and then into the entrance tube 28.

[0037] The entrance tube 28 may comprise a spring valve 80 at a low point on the entrance tube 28 to allow for the release of accumulated moisture or other material. The entrance tube 28 preferably comprises an arch with an enlarged radius to allow for minimal interruption of the air column. The entrance tube 28 is in fluid communication with the monobody valve block 30, preferably at the third valve chamber 94 through the lead-pipe interface 46.

[0038] The column of air can be subjected to elongation as it passes through the monobody valve block 30. Thus, tones are created and music can be played. This elongation is facilitated through a plurality of elongation tubes comprising slides 32, 34, 36. The monobody valve block 30 is in fluid communication with a first-slide 32, a second-slide 34, and a third-slide 36, each of which may be adjusted to tune the instrument and each of which are connected in fluid communication with the monobody valve block 30 to allow for the elongation of the column of air when corresponding valves 40, 42, 43, are depressed. The preferred valve indexing of the present invention is substantially similar to conventional brass-wind instrument indexing, except that it allows for a through-hole on the whole

length of the monobody valve block, and it provides for all four sides of valves one and three to be used.

[0039] The first-slide 32 is in fluid communication with the first valve chamber 90 at a first first-slide interface 56 and a second first-slide interface 58. The second-slide is in fluid communication with the second valve chamber 92 at a first second-slide interface 52 and a second second-slide interface 54. The third-slide 36 is in fluid communication with the third valve chamber 94 at a first third-slide interface 48 and a second third-slide interface 50. Each interface 46, 48, 50, 52, 54, 56, 58, 60 in the monobody valve block is positioned in a location so as to substantially align with the appropriate air channels (not shown) in the corresponding piston valves 41, 43, 45 when the valves are fully depressed or not depressed at all. Each valve piston 41, 43, 45 can comprise a valve guide 51, 53, 55, respectively to maintain appropriate valve alignment.

[0040] When played, the column of air enters into the monobody valve block wherein it then passes through the valves and various elongation tubes. The column of air exits the monobody valve block 30 at the first valve chamber 90 wherein it enters the exit tube 38 at the exit tube interface 60. The air column travels through the exit tube 38 and out of the instrument 10 through the bell 100.

[0041] The instrument may further comprise finger holes 68, 70, 72 for maintaining a better grasp on the instrument during play.

[0042] Referring now to FIGS. 3 and 4, a prior art trumpet design is illustrated and generally referred to by the reference number 110.

[0043] As can be easily seen from a view of the prior art trumpet 110 the bends of the tubing comprising the instrument are substantially sharper than those of the present invention. For example, the bend in the entrance tube 128 is sharper than that of the present invention in all aspects including the entrance tube interface 146. The first slide 132, the second-slide 134 and the third-slide 136 all have a sharper bend than that of the instant invention. In addition, all have sharper bends at their respective interfaces 156 and 158, 152 and 154, and 148 and 150. Moreover, the exit interface 160 of the exit tube 138 has a sharper bend before the air column exits the instrument.

[0044] Referring now to FIG 5 a prior art cornet having a shepard's crook design is illustrated and generally designed by the reference numeral 210. The enlarged radii of the entrance tube 228 and exit tube 238 theoretically remedied a small portion of the defects inherent in conventional trumpet design. This design however did not achieve its intended purpose because

although the entrance tube 228 and exit tube 238 had larger radii initially, each tube still had an abrupt and sharp bend prior to interfacing with the valve chamber. As can also be seen, the first-slide 232, the second-slide 234, and the third-slide 236 largely remained unchanged. Each slide has an acutely sharp bend resulting in an impedance in the air column. While some impedance occurred as a result of the tube structure comprising much of the prior art instruments 110 and 210, the lion's share of the impedance occurred as a result of the design of the prior art valve sections.

[0045] Referring next to FIG. 6 a prior art valve casing is illustrated and generally designed by reference number 130. As is shown the first valve 190, second valve 192, and third valve 194 are separately constructed and attached by attachment means 186a through 186f. Also shown are the acutely sharp bends at the entrance to the interface 146, the second slide exit interface 152, the second slide 134, the second slide entrance interface, the first slide exit interface 160, the third valve second valve interface 184, and the second valve first valve interface 182. Not shown but present in the design are acutely sharp bends at the third slide entrance interface (not shown) and the exit tube interface (not shown). Also not shown, but present are the U air channels in the valve pistons 41, 43, 45 which cause further impedance of the air column. Turning next to

FIG. 7, the monobody valve block 30 provides for a smoother transaction of the air column over the prior art. The monobody valve block comprises a series of valve cylinders 90, 92, 94 milled directly out of a solid piece of metal. Each interface 46, 48, 50, 52, 54, 56, 58, 60 is also milled directly into the monobody valve block at an angle substantially perpendicular to the respective valve cylinder 90, 92, 94. The valve pistons 41, 43, 45 are of sufficient size to comprise unoccluded air channels. The monobody valve block 30 may comprise a threaded regions at the top of the valve cylinders 91, 93, 95 as well as the bottom 63, 65, 67 to receive valve retention caps 74, 76, 78 and valve wells 62, 64, 66, respectively.

[0046] Referring next to FIGS. 8 and 9, the valve indexing of monobody valve block 30 is illustrated. The arrows indicate the pathway that the column of air created by the player will follow through the instrument. The reference letter A indicates the path of the particular valve in an "at rest" position. The reference letter B indicates the path of a particular valve in the "depressed" position.

[0047] The column of air created by the player travels down the lead pipe 26 to the lead pipe interface 46 of the third valve 44. When the third valve 44 is in the rest position A, the column of air travels through the lead pipe interface 46 to the third valve-second valve interface 82A and into the second valve

42. When the third valve 44 is in the depressed position B, the air column travels through the lead pipe interface 46 through an air channel (not shown) in the third valve 44, out through the third-slide exit interface 48 through the third-slide 36, back into the third valve 44, through the third-slide entrance interface 50, through the valve 44, through the third valve-second valve interface 82B and into the second valve 42.

[0048] The column of air enters the second valve 42 at the third valve-second valve interface 82. When the second valve 42 is in the past position A, the column of air travels through the third valve-second valve interface 82, through an air channel (not shown) in the second valve 42, through the second valve first valve interface 82 and into the first valve 40.

[0049] When the second valve 42 is in the depressed position B, the air column travels through the third valve-second valve interface 82, through an angled air channel (not shown) in the second valve 42, through the second slide exit interface 52, through the second slide 34, through the second slide enhance interface 54, into another angled air channel (not shown) in the second valve 42 and into the second valve-first valve interface 84.

[0050] When the first valve 40 is in the rest position A, the column of air travels into an air channel (not shown) in the first valve 40 from the second valve-first valve interface 84

and exits the monobody valve block 30 through the exit tube interface 60, through the exit tube 38 and out through the bell 100.

[0051] When the first valve 40 is in the depressed position B, the air column travels through the second valve-first valve interface 84, through an angled air channel (not shown) in the first valve piston 40, through the first slide exit interface 56, through the first slide 32, through the first slide entrance interface 58, through another angled air channel(s) in the first valve piston 40, through the exit tube interface 60, through the exit tube 38 and out of the instrument 10 through the bell 100.

[0052] Referring finally to FIG. 10 the gapless mouthpiece assembly is illustrated. The mouthpiece 20 comprises a shank 29 having a negative conical interval shape and is generally milled from a solid piece of metal. The mouthpiece 20 is received in the mouthpiece receiver 22. The leadpipe 26 comprises a friction means 24, 25 and for removably retaining and adjusting the pitch of the instrument. In a preferred embodiment the friction means 24 comprises a split collar 25 surrounding the end of the lead pipe 26 that is tightened or loosened by turning a thumbscrew 27. When the mouthpiece 20 is in the mouthpiece retainer 22, the retention means 24 operates to retain the position of the leadpipe at the properly tuned position. The mouthpiece 20 comprises a generally negative conical shape and has an exit

bore 28 substantially equal to the entrance 31 of the positively conical lead pipe 26. .

[0053] Inasmuch as the preceding disclosure presents the best mode devised by the inventor for practicing the invention and is intended to enable one skilled in the pertinent art to carry it out, it is apparent that methods incorporating modifications and variations will be obvious to those skilled in the art. As such, it should not be construed to be limited thereby but should include such aforementioned obvious variations and be limited only by the spirit and scope of the following claims.

Abstract of the Disclosure

[0054] A brass wind instrument and method comprising: a single piece body further comprising a plurality of valve cylinders for receiving valves and a plurality of ports and interfaces in fluid communication with said valve cylinder, wherein said ports and interfaces are substantially perpendicular to the axis of said valve cylinder.

EXHIBIT B



BRASS-WIND INSTRUMENT VALVE AND METHOD

Field of the Invention

[0001] The subject invention pertains to brass-wind musical instruments and more specifically to mono body valve blocks for brass-wind instruments.

Background of the Invention

[0002] In brass-wind musical instruments, sounds are initially produced by players pressing their lips against bell-shaped mouthpieces and blowing into the mouthpieces while maintaining their lips in a rigid configuration. The air passing through the rigid lips of the players causes the skin of the lip to resonate thereby resulting in a concentric column of air comprising a "buzzing" sound. As this column of buzzing air passes into the instrument, it flows through a series of tubes and valves comprising the instrument wherein it is amplified before it exits from the bell portion of the instrument thereby creating a tone. It is the series of sharp turns within the valves and tubes that generally alter the consistency of the density of the air column and have a negative effect to the tone and the intonation.

[0003] The negative effects resulting from the numerous deficiencies in current brass-wind instruments have been

necessary evils due to the currently widely accepted designs. While minor changes have been proposed to improve brass-wind instruments, musicians have had little choice but to "live with" and play music with the current designs.

[0004] To alter the tones emanating from the instrument, players will adjust the rigidity of their lips, press a series of valves and/or adjust any of the tuning pipes in the instrument. Adjusting the rigidity of the lips alters the initial pitch of the column of air prior to its entering the instrument. Depressing the valves can operate to elongate the column of air resonating through the instrument thus resulting in differing notes. Adjusting any of the tuning pipes operates to fine-tune the instrument by combining the proper pitch with the proper valve configuration and the proper tuning; players are able to play specific notes and thus music.

[0005] Current brass-wind instruments are generally adequate for producing the desired music; however, there is always room to improve the quality of sound produced. Most of the drawbacks to current brass-wind instrument sounds find their genesis in undesirable inconsistencies of the density within the concentric column of air flowing through the instrument. These inconsistencies in the column of air can originate from a number of causes.

[0006] Brass-wind instruments such as, for example, the trumpet, comprises valve sections consisting of valves in separate valve chambers. These valve chambers are generally connected to one another by way of soldered or ~~braised~~ ~~(brazed?)~~ brazed brass tubes. There are at least three defects inherent in this design that causes impedance in the flow of the column of air traveling through the instrument leading to an interruption of the positive vortex, thereby resulting in an imperfect sound.

[0007] First, due to the distance between the valve chambers, there is a size restriction on the valve. With this size restriction, pistons have restricted air channels caused by two air channels occupying the same general area in the piston valve. Because any connection of the air channels in the valve would effectively rend the instrument useless, one of the valves must have impedance. As a result, one of the conflicting air channels is required to have a shape comprising impedance. This impedance generally comprises a bubble shape located in the air channel. Such impedance in the air channel operates to disrupt the positive vortices of the column of air thus negatively altering its sound.

[0008] Another defect that causes a disruption of the column of air comes as a result of the method of connecting the valve chambers to each other, as well as the remainder of the instrument. Where two tubes are connected, often a sharp ridge

or edge operates to disrupt the flow of the air column causing additional impedance in sound. Because tubes are soldered or braised, the connection resulting from the manufacture of the instrument is often less than perfect. This causes a negative effect on the positive vortices, thereby resulting in a diminished sound.

[0009] Additional defects inherent in the size of the valve section are the odd shapes and sharp bends of the tubes connecting the valve chambers to one another. As the column of air passes through the instrument, it is desirable to have a perfectly smooth transition throughout. Odd shapes and sharp bends can hinder the desired smooth transition and impede the sound. Sharp bends are not limited to the valve sections as there are many sharp bends in brass-wind instruments that can act to disrupt or impede the flow of the column of air created by the player. For example, the tuning tubes that operate to elongate the column of air often have sharp 180° bends that further impede the sound created by the player. With these defects in mind, there has long been a desire in the brass-wind instrument industry to improve the quality of sound.

[0010] Apparatus for tuning instruments in an attempt to overcome many sound deficiencies are known in the art. For example, United States Patent No. 3,990,342 to Reeves discloses an adjustable piston valve having a mechanical means for

continuous adjustment of the upstroke and down stroke of the valve. The adjustment means can be used to tune the instrument for improved play and sound.

[0011] United States Patent No. 4,273,020 to Happe discloses a method of constructing a brass-wind instrument comprising a lead pipe having an increased taper. The gradually increased taper results in a more pure column of air thereby creating an improved sound.

[0012] United States Patent Nos. 4,276,804 and 4,512,233, both to Holland disclose pitch adjusters attached in series with the tubes comprising the instrument. The pitch adjusters operate to change the length of the column of air to fine tune the instrument.

[0013] With all of these inventions furthering the state of the brass-wind instrument art, there is still a need to remedy the inherent defects in currently accepted designs that cause an impedance in sound due to the undesired changes and inconsistencies in the density of the air column. Accordingly, improvements to current brass-wind instruments are both desirable and possible. The following describes such improvements.

Summary of the Invention

[0014] In view of the foregoing background, it is therefore an object of the present invention to provide a brass-wind

instrument and method for making such having improved sound characteristics through a monobody valve block, unimpeded air channels, and larger radii throughout the instrument.

[0015] This and other objects, features, and advantages in accordance with the present invention are provided by a brass-wind instrument comprising a mouthpiece, a lead-pipe, a monobody valve block, a series of tubes connected to said monobody valve block provided to change the length of the air column in the instrument, valves disposed in said monobody valve block, an exit-pipe, and a bell. More specifically, the monobody valve block comprises a series of tubes and valves having sufficient size and shape to avoid impeding the travel of the air column therethrough.

[0016] The monobody valve block is comprised of a single solid piece of material having valve chambers milled therein. For example, the valve chambers are milled vertically through the material. All tube interfaces entering and exiting the valve block are milled at substantially right angles to the body of the valve block and perpendicular to the corresponding valve chamber. Each valve chamber has a guide means that operates to keep the valve disposed therein from rotating within the valve chamber during use.

[0017] The configuration of the monobody valve block is such that the size of the valves may be increased while the valve

block size is substantially similar in overall size to that of conventional valve blocks that comprise separate valve chambers. The valve's pistons are of sufficient size to comprise air channels that do not compete for space. This provides for unoccluded air channels thus resulting in improved acoustical performance.

[0018] The top and/or bottom of each valve chamber may contain threaded regions. The top threaded region operates to maintain the position of the valve and keep it in its proper place. The bottom-threaded region can receive a cap having a ~~shall~~ shallow basin that operates to collect residual valve lubricant, or other undesirable materials.

[0019] The valve indexing can be substantially similar to that of conventional brass-wind instruments, such as, for example, trumpets, cornets, baritones, tubas and the like. Accordingly, the improved acoustical characteristics of the present invention may be employed in a brass-wind instrument without having to learn to play an additional instrument.

[0020] Attached to the monobody valve block is generally a first slide, a second slide, and a third slide in fluid communication with the valves to allow for a change in the length of the air column. The plurality of slides may be adjusted accordingly to further tune the instrument and further improve the acoustical characteristic thereof.

[0021] The radii of the bends in the brass-wind instrument of the present invention are enlarged to reduce the sharp bends associated with conventional instruments. The enlarged radii allow for the vortices in the air column to travel through the instrument with little to no impedance thus adding to the improved acoustical performance.

[0022] The mouthpiece receiver of the present invention can comprise, for example, a gapless mouthpiece receiver. The gapless mouthpiece receiver substantially eliminates negative vortices resulting from the "gap" that generally occurs between the shank of current mouthpieces and the mouthpiece receivers attached to the lead-pipes. In general, as the buzzing air column crosses the gap of conventional instruments negative vortices are created as a result of the turbulence that occurs. The mouthpiece of the present invention is comprised of a solid piece of material bored out to further comprise a negative conical shape having a diameter equal to that of the smaller end of the positively conical lead-pipe. The turbulence resulting from any existent gap can be controlled by modification of the mouthpiece shank and the air column undergoes no further constriction once it leaves the mouthpiece. Accordingly, the result is a positive concentric vortex having very little or no impedance.

[0023] Further objects and advantages of the present invention will become apparent by reference to the following detailed description of the invention and appended drawings wherein like reference numbers refer to the same feature, element, or component.

Brief Description of the Drawings

[0024] FIG. 1 is an elevational side plan view of a brass-wind musical instrument comprising a monobody valve block according to the present invention.

[0025] FIG. 2 is an elevational top plan view of a brass-wind musical instrument comprising a monobody valve block according to the present invention.

[0026] FIG. 3 is an elevational side plan view of a prior art trumpet.

[0027] FIG. 4 is an elevational top plan view of a prior art trumpet.

[0028] FIG. 5 is an elevational side plan view of a prior art cornet comprising a shepard's crook design.

[0029] FIG. 6 is an elevational side plan view of a conventional prior art valve block.

[0030] FIG. 7 is an elevational side sectional view of the monobody valve block according to the present invention.

[0031] FIG. 8 is an elevational sectional top view illustrating the valve indexing of the monobody valve block according to the present invention.

[0032] FIG. 9 is an elevational sectional side view illustrating the valve indexing of the monobody valve block according to the present invention.

[0033] FIG. 10 is an elevational sectional side view of the gapless mouthpiece according to the present invention.

Detailed Description of the Invention

[0034] Referring now to FIGS 1 and 2, a brass-wind apparatus comprising a monobody valve block according to the present invention is illustrated and generally referred to by the reference number 10.

[0035] The brass-wind instrument 10 generally includes a mouthpiece 20, a mouthpiece receiver 22, a lead-pipe 26, an entrance tube 28, monobody valve block 30, valves 40, 42, 44, a first-slide 32, a second-slide 34, a third-slide, 36 an exit tube, 38 and a bell 100.

[0036] Sound comprising a column of air is made at the mouthpiece 20 that is complementarily received in a mouthpiece receiver 22. The mouthpiece 20 preferably comprises a negative conical internal shape and is received in the mouthpiece receiver 22. The mouthpiece receiver 22 further comprises a friction means 24 to removably retain and adjust the mouthpiece

20 therein. The mouthpiece 20 may be adjusted to fine tune the instrument 10. The column of air is pushed from the mouthpiece 20 into the lead-pipe 26 and then into the entrance tube 28.

[0037] The entrance tube 28 may comprise a spring valve 80 at a low point on the entrance tube 28 to allow for the release of accumulated moisture or other material. The entrance tube 28 preferably comprises an arch with an enlarged radius to allow for minimal interruption of the air column. The entrance tube 28 is in fluid communication with the monobody valve block 30, preferably at the third valve chamber 94 through the lead-pipe interface 46.

[0038] The column of air can be subjected to elongation as it passes through the monobody valve block 30. Thus, tones are created and music can be played. This elongation is facilitated through a plurality of elongation tubes comprising slides 32, 34, 36. The monobody valve block 30 is in fluid communication with a first-slide 32, a second-slide 34, and a third-slide 36, each of which may be adjusted to tune the instrument and each of which are connected in fluid communication with the monobody valve block 30 to allow for the elongation of the column of air when corresponding valves 40, 42, 43, are depressed. The preferred valve indexing of the present invention is substantially similar to conventional brass-wind instrument indexing, except that it allows for a through-hole on the whole

length of the monobody valve block, and it provides for all four sides of valves one and three to be used.

[0039] The first-slide 32 is in fluid communication with the first valve chamber 90 at a first first-slide interface 56 and a second first-slide interface 58. The second-slide is in fluid communication with the second valve chamber 92 at a first second-slide interface 52 and a second second-slide interface 54. The third-slide 36 is in fluid communication with the third valve chamber 94 at a first third-slide interface 48 and a second third-slide interface 50. Each interface 46, 48, 50, 52, 54, 56, 58, 60 in the monobody valve block is positioned in a location so as to substantially align with the appropriate air channels (not shown) in the corresponding piston valves ~~(not shown)~~ 41, 43, 45 when the valves are fully depressed or not depressed at all. Each valve piston 41, 43, 45 can comprise a valve guide 51, 53, 55, respectively, to maintain appropriate valve alignment.

[0040] When played, the column of air enters into the monobody valve block wherein it then passes through the valves and various elongation tubes. The column of air exits the monobody valve block 30 at the first valve chamber 90 wherein it enters the exit tube 38 at the exit tube interface 60. The air column travels through the exit tube 38 and out of the instrument 10 through the bell 100.

[0041] The instrument may further comprise finger holes 68, 70, 72 for maintaining a better grasp on the instrument during play.

[0042] Referring now to FIGS. 3 and 4, a prior art trumpet design is illustrated and generally referred to by the reference number 110.

[0043] As can be easily seen from a view of the prior art trumpet 110 the bends of the tubing comprising the instrument are substantially sharper than those of the present invention. For example, the bend in the entrance tube 128 is sharper than that of the present invention in all aspects including the entrance tube interface 146. The first slide 132, the second-slide 134 and the third-slide 136 all have a sharper bend than that of the instant invention. In addition, all have sharper bends at their respective interfaces 156 and 158, 152 and 154, and 148 and 150. Moreover, the exit interface 160 of the exit tube 138 has a shaper bend before the air column exits the instrument.

[0044] Referring now to FIG 5 a prior art cornet having a shepard's crook design is illustrated and generally designed by the reference numeral 210. The enlarged radii of the entrance tube 228 and exit tube 238 theoretically remedied a small portion of the defects inherent in conventional trumpet design. This design however did not achieve its intended purpose because

although the entrance tube 228 and exit tube 238 had larger radii initially, each tube still had an abrupt and sharp bend prior to interfacing with the valve chamber. As can also be seen, the first-slide 232, the second-slide 234, and the third-slide 236 largely remained unchanged. Each slide has an acutely sharp bend resulting in an impedance in the air column. While some impedance occurred as a result of the tube structure comprising much of the prior art instruments 110 and 210, the lion's share of the impedance occurred as a result of the design of the prior art valve sections.

[0045] Referring next to FIG. 6 a prior art valve casing is illustrated and generally designed by reference number 130. As is shown the first valve 190, second valve 192, and third valve 194 are separately constructed and attached by attachment means 186a through 186f. Also shown are the acutely sharp bends at the entrance to the interface 146, the second slide exit interface 152, the second slide 134, the second slide entrance interface, the first slide exit interface 160, the third valve second valve interface 184, and the second valve first valve interface 182. Not shown but present in the design are acutely sharp bends at the third slide entrance interface (not shown) and the exit tube interface (not shown). Also not shown, but present are the occluded air channels in the valve pistons (not shown), which cause further impedance of the air column. Turning

next to FIG. 7, the monobody valve block 30 provides for a smoother transaction of the air column over the prior art. The monobody valve block comprises a series of valve cylinders 90, 92, 94 milled directly out of a solid piece of metal. Each interface 46, 48, 50, 52, 54, 56, 58, 60 is also milled directly into the monobody valve block at an angle substantially perpendicular to the respective valve cylinder 90, 92, 94. The valve pistons ~~(not shown)~~ 41, 43, 45 are of sufficient size to comprise unoccluded air channels. The monobody valve block 30 may comprise a threaded region at the top of the valve cylinders ~~90, 92, 94~~ 91, 93, 95 as well as the bottom 63, 65, 67 to receive valve retention caps 74, 76, 78 and valve wells 62, 64, 66, respectively.

[0046] Referring next to FIGS. 8 and 9, the valve indexing of monobody valve block 30 is illustrated. The arrows indicate the pathway that the column of air created by the player will follow through the instrument. The reference letter A indicates the path of the particular valve in an "at rest" position. The reference letter B indicates the path of a particular valve in the "depressed" position.

[0047] The column of air created by the player travels down the lead pipe 26 to the lead pipe interface 46 of the third valve 44. When the third valve 44 is in the rest position A, the column of air travels through the lead pipe interface 46 to the

third valve-second valve interface 82A and into the second valve 42. When the third valve 44 is in the depressed position B, the air column travels through the lead pipe interface 46 through an air channel (not shown) in the third valve 44, out through the third-slide exit interface 48 through the third-slide 36, back into the third valve 44, through the third-slide entrance interface 50, through the valve 44, through the third valve-second valve interface 82B and into the second valve 42.

[0048] The column of air enters the second valve 42 at the third valve-second valve interface 82. When the second valve 42 is in the past position A, the column of air travels through the third valve-second valve interface 82, through an air channel (not shown) in the second valve 42, through the second valve first valve interface 82 and into the first valve 40.

[0049] When the second valve 42 is in the depressed position B, the air column travels through the third valve-second valve interface 82, through an angled air channel (not shown) in the second valve 42, through the second slide exit interface 52, through the second slide 34, through the second slide enhance interface 54, into another angled air channel (not shown) in the second valve 42 and into the second valve-first valve interface 84.

[0050] When the first valve 40 is in the rest position A, the column of air travels into an air channel (not shown) in the

first valve 40 from the second valve-first valve interface 84 and exits the monobody valve block 30 through the exit tube interface 60, through the exit tube 38 and out through the bell 100.

[0051] When the first valve 40 is in the depressed position B, the air column travels through the second valve-first valve interface 84, through an angled air channel (not shown) in the first valve piston 40, through the first slide exit interface 56, through the first slide 32, through the first slide entrance interface 58, through another angled air channel(s) in the first valve piston 40, through the exit tube interface 60, through the exit tube 38 and out of the instrument 10 through the bell 100.

[0052] Referring finally to FIG. 10 the gapless mouthpiece assembly is illustrated. The mouthpiece 20 comprises a shank 29 having a negative conical interval shape and is generally milled from a solid piece of metal. The mouthpiece 20 ~~(not shown)~~ is received in the mouthpiece receiver 22. The leadpipe 26 comprises a fiction means 24, 25 and for removably retaining and adjusting the pitch of the instrument. In a preferred embodiment the ~~function~~ friction means 24 comprises a split collar 25 surrounding the end of the lead pipe 26 that is tightened ~~[[is]]~~ or loosened by ~~tuning~~ turning a thumbscrew 27. When the mouthpiece 20 is in the mouthpiece retainer 22, the retention means 24 operates to retain the position of the leadpipe at the

properly tuned position. The mouthpiece 20 comprises a generally negative conical shape and has an exit bore ~~[[27]]~~ 28 substantially equal to the entrance 31 of the positively conical lead pipe 26.

[0053] Inasmuch as the preceding disclosure presents the best mode devised by the inventor for practicing the invention and is intended to enable one skilled in the pertinent art to carry it out, it is apparent that methods incorporating modifications and variations will be obvious to those skilled in the art. As such, it should not be construed to be limited thereby but should include such aforementioned obvious variations and be limited only by the spirit and scope of the following claims.

Abstract of the Disclosure

[0054] A brass wind instrument and method comprising: a single piece body further comprising a plurality of valve cylinders for receiving valves and a plurality of ports and interfaces in fluid communication with said valve cylinder, wherein said ports and interfaces are substantially perpendicular to the axis of said valve cylinder.

EXHIBIT C